

# New QFC member set to become global portfolio manager of spot LNG



A Qatar Financial Centre (QFC) newcomer will establish its position as a global portfolio manager of spot LNG, or liquefied natural gas trades that will have immediate local knock-on effects, after Doha expands its LNG production from the present 110mn tonnes per annum.

This outcome is one among the “unsung” economic benefits that will follow North Field Expansion (NFE), which is also set to enhance the prospects of asset management industry in the country, the QFC said in an article.

The NFE project will not only bring up natural gas from underground, but also other valuable hydrocarbons for export and domestic use, it said, pointing out that associated hydrocarbons destined for export include 260,000 barrels per day of condensate and 11,000t/d of liquefied petroleum gas, valued at roughly \$3.05bn annually (using posted 2020 average prices).

“The additional income earned through hydrocarbon exports will

increasingly make Qatar a destination for asset managers and other financial institutions,” the QFC said. As imports of construction inputs and machinery wane with most infrastructure projects coming close to completion, Qatar’s trade surplus is likely to register bigger in the years ahead. “Once NFE-related exports commence in late 2025, export earnings are destined to reach still higher. Whereas much of the immediate proceeds are destined to the Ministry of Finance and Qatar Investment Authority, there is a progressively stronger case for specialised asset managers to locate in Doha close to their future investors,” QFC said.

In tandem, it said, financial institutions in the country will increasingly be called upon to provide a variety of sophisticated products to Qatari firms with a growing international footprint.

As Qatar’s economy continues to grow at home in terms of complexity, and abroad with its varied connections, the financial sector is set to grow substantially.

As Qatar looks ahead, it is destined to leverage its natural gas-focused competitive cost advantages, global network, existing industrial base, innovative focus and high-profile investments to become an attractive and rewarding business destination.

The QFC plays a key part of the country’s development journey, which it looks forward to supporting with vigour and indirectly offering firms on its platform noteworthy prospects.

The first certain phase concerns the North Field East that comprises an approximate \$28.75bn of investments – half of which has received a final investment decision as of February 2021.

Beyond that, Qatar Petroleum, or QP, is appraising different areas of the North Field to possibly award a subsequent expansion phase within the next three years.

The QP has made this NFE investment at an opportune time, which will allow it to capture more global LNG market share and gain footholds in new markets as many competitors pull

back from major projects, according to the QFC article.

Another “unsung” benefit is the North field’s expansion would drive local manufacturing opportunities. Additionally, there will be 4,000t/y of ethane for use as feedstock in Qatar’s growing petrochemicals sector. This hike equates to nearly 50% of existing 2020 export capacity, or 36.4% of current domestic base quantities.

A combination of these NFE ethane volumes and those from Barzan enables Qatar to produce in future a greater variety as well as more complex petrochemicals, such as those that will originate from the joint venture with Chevron Phillips (70% owned by QP) using the Middle East’s largest 1.9mn t/y ethane cracker in Ras Laffan to start production in 2025.

This is critical to the local economy, according to Gulf Petrochemicals and Chemicals Association, which recently outlined that with oil at \$65 a barrel, crude producers can earn \$15 per barrel by refining their output and an extra \$30 a barrel on top of that by converting it into petrochemicals.

“As Qatar continues its drive to diversify economically, local manufacturing will play a key role,” the QFC article said.

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**East Mediterranean Maritime Borders: Lebanon vs. Israel: Whatever talks achieve both Lebanon and Israel need to update Maritime Boundaries**



Θαλάσσια σύνορα της Ανατολικής Μεσογείου

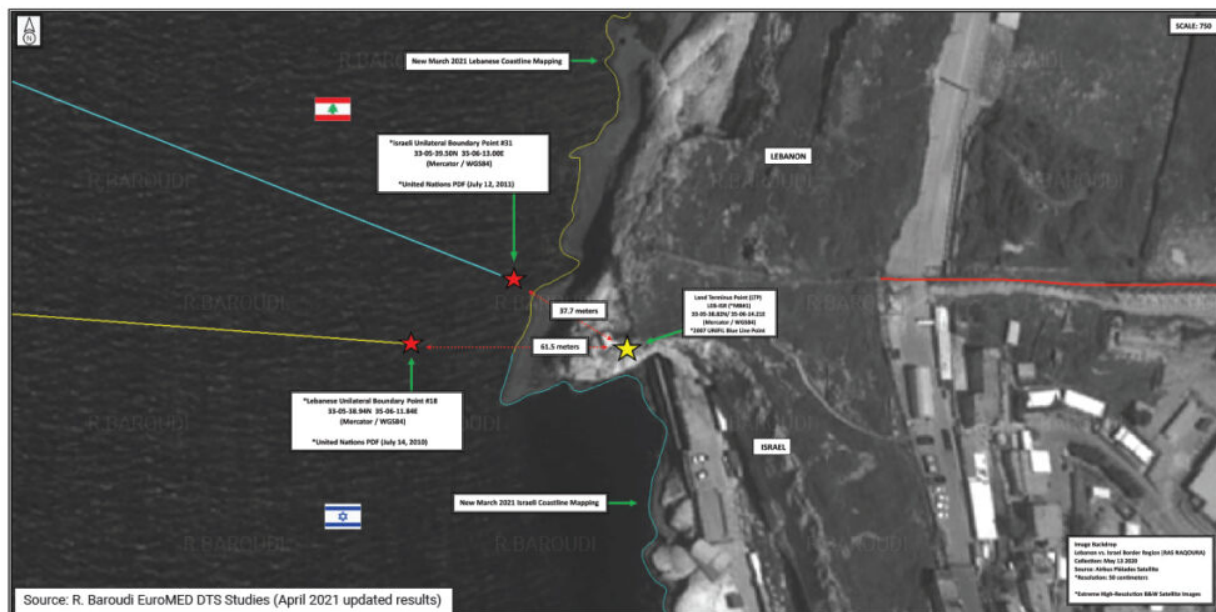
**Από τον Ρούντι Μπαρούντι**

Λίβανο VS Ισραήλ : Σε όποιες συνομιλίες και εάν καταλήξουν τόσο το Ισραήλ όσο και ο Λίβανος πρέπει να επικαροποιήσουν τα θαλάσσια σύνορα



## Lebanon and Israeli gazetted boundaries

Lebanese unilateral declared MB document (2010) vs Israeli unilateral declared document (2011)



Οι πολιτικοί κύκλοι του Λιβάνου ασχολούνται και πάλι, αυτή τη φορά σχετικά με το εάν ο Λίβανος πρέπει να καταθέσει στα Ηνωμένα Έθνη νέες συντεταγμένες που να ορίζουν την υπεράκτια αποκλειστική οικονομική ζώνη (ΑΟΖ) της χώρας.

Στην πραγματικότητα, δύο ερωτήσεις πρέπει να απαντηθούν:

- 1) Ο Λίβανος έχει το δικαίωμα να επικαιροποιήσει τους θαλάσσιους ισχυρισμούς του στον ΟΗΕ;
- 2) Εάν ναι, θα πρέπει ο Λίβανος να κάνει χρήση αυτού του δικαιώματος υπό τις παρούσες συνθήκες;

Το ζήτημα είναι κρίσιμο, όχι μόνο επειδή σχετίζεται άμεσα με τις συνομιλίες επί των θαλασσίων ζωνών οι οποίες επί τους παρόντος έχουν καθεστερήσει αλλά και επειδή επηρεάζει την ταχύτητα με την οποία μπορεί να αρχίσει να λαμβάνει απτά οφέλη από τυχόν υποθαλάσσιους υδρογονάνθρακες εντός της ΑΟΖ της .

Για να σας βοηθήσω, η πρώτη ερώτηση είναι η ευκολότερη. Το δικαίωμα του Λιβάνου να επικαιροποιηθεί τις συντεταγμένες στον ΟΗΕ όχι μόνο κατοχυρώνεται στη Σύμβαση των Ηνωμένων Εθνών για

το Δίκαιο της Θάλασσας (UNCLOS), αλλά προστατεύεται επίσης από το Διεθνές Εθιμικό Δίκαιο (CIL), και καθιερώθηκε από αμέτρητες προηγούμενες περιπτώσεις ως συνήθη πρακτική των χωρών που επιδιώκουν να καθορίσουν και να υπερασπιστούν τους θαλάσσιους ισχυρισμούς τους, κυρίως επειδή η συνεχής τεχνολογική πρόοδος επιτρέπει όλο και πιο ακριβή χαρτογράφηση. Είναι επίσης σημαντικό να σημειωθεί ότι το Προεδρικό Διάταγμα 6433 του 2010, σύμφωνα με το οποίο οι συντεταγμένες του Λιβάνου κατατέθηκαν για τελευταία φορά στον ΟΗΕ, προέβλεπε ρητά τη δυνατότητα μελλοντικών ενημερώσεων. Το άρθρο 3 δεν αφήνει κανένα περιθώριο παρερμηνείας: «Ανάλογα με τις ανάγκες, και υπό το πρίσμα των διαπραγματεύσεων με τα σχετικά γειτονικά κράτη, τα σύνορα της αποκλειστικής οικονομικής ζώνης μπορούν να οριστούν και να βελτιωθούν και, κατά συνέπεια, να τροποποιηθεί ο χάρτης των συντεταγμένων της, εάν γίνουν διαθέσιμα ακριβέστερα δεδομένα. Να μην υπάρχει αμφιβολία, και όπως θα δούμε παρακάτω, τέτοια δεδομένα έχουν καταστεί διαθέσιμα. Επιπλέον, όταν η Μόνιμη Αποστολή του Λιβάνου στα Ηνωμένα Έθνη κατέθεσε τους ισχυρισμούς που εγκρίθηκαν βάσει του διατάγματος 6433, η συνοδευτική επιστολή περιελάμβανε την ακόλουθη δήλωση : «Υπάρχει ανάγκη διεξαγωγής μιας λεπτομερούς έρευνας, χρησιμοποιώντας ένα παγκόσμιο σύστημα εντοπισμού θέσης, της ακτής που εφάπτεται στην νότιο όριο, συμπεριλαμβανομένων όλων των νησιών και των νησίδων με σκοπό την ενημέρωση των ναυτικών χαρτών και της γραμμής βάσης ανάλογα στο μέλλον. » Και πάλι, για να είμαστε απόλυτα σαφείς: έχουν διεξαχθεί τέτοιες έρευνες. Επίσης, ενώ οι Ισραηλινοί αξιωματούχοι έχουν επιδιώξει (όχι πολύ πειστικά) να αμφισβητήσουν το δικαίωμα του Λιβάνου να κατατεθεί τους ισχυρισμούς του, η συμφωνία οριοθέτησης ΑΟΖ του Οκτωβρίου 2010 της ίδιας της χώρας τους (η οποία βασίζεται σε ισραηλινές συντεταγμένες τις οποίες γνωρίζουμε τώρα ότι είναι λανθασμένες και, επομένως, θα απορριφθούν από οποιοδήποτε δικαστήριο) με την Κύπρο να αναγνωρίζει επίσης ρητά το γεγονός ότι σύμφωνα με το Εθιμικό Διεθνές Δίκαιο τέτοιες συντεταγμένες υπόκεινται σε αλλαγές. Το άρθρο 1 παράγραφος ε, της εν λόγω συμφωνίας έχει ως εξής: «Λαμβάνοντας υπόψη τις αρχές του εθιμικού διεθνούς

δικαίου σχετικά με την οριοθέτηση της αποκλειστικής οικονομικής ζώνης μεταξύ κρατών, οι γεωγραφικές συντεταγμένες των σημείων 1 ή 12 θα μπορούσαν να αναθεωρηθούν ή και να τροποποιηθούν ως αναγκαία υπό το φως μιας μελλοντικής συμφωνίας σχετικά με την οριοθέτηση της Αποκλειστικής Οικονομικής Ζώνης από τα τρία ενδιαφερόμενα κράτη σε σχέση με καθένα από τα εν λόγω σημεία. ”

Επιπλέον, σε μια μεταγενέστερη μονομερή κατάθεση των συντεταγμένων στον ΟΗΕ, η αντιπροσωπεία του Ισραήλ στον παγκόσμιο οργανισμό όχι μόνο αναφέρεται στις «σχετικές διατάξεις του άρθρου 1 παράγραφος ε αλλά επίσης αναπαράγει τη γλώσσα, ουσιαστικά κατά λέξη. Ο ισχυρισμός μάλιστα επανειλημμένα ανέφερε «τα τρία ενδιαφερόμενα κράτη», το οποίο στο πλαίσιο μπορεί να δείξει μόνο τον Λίβανο ως το τρίτο κράτος.

Στο δικαίωμα του Λιβάνου να υποβάλει νέες συντεταγμένες, λοιπόν, η ετυμηγορία είναι αναπόφευκτη: έχει σίγουρα αυτό το δικαίωμα. Ρεαλιστικά, όποιος υποστηρίζει διαφορετικά είτε αντιτίθεται στα συμφέροντα του Λιβάνου (που χρειάζεται να αναπτύξει αυτούς τους πόρους), των Λιβανέζων (που αξίζουν να αποκομίσουν τις συνοδευτικές οικονομικές ανταμοιβές) και των Λιβανέζικων Ένοπλων Δυνάμεων (που επενδύουν σε μεγάλο βαθμό σε ένα θετικό αποτέλεσμα).

Απορριπώντας τα γεγονότα και τους κανόνες · ή επιδιώκοντας κάποιο άλλο πολιτικό, οικονομικό ή και άλλο προσωπικό κομματικό πλεονέκτημα.

Επόμενη ερώτηση: πρέπει ο Λίβανος να ασκήσει το δικαίωμά του σε αυτήν τη συγκεκριμένη συγκυρία;

Σε μια πρώτη ανάγνωση των δεδομένων, αυτή η απάντηση είναι σχεδόν εξίσου σαφής. Το 2011, λίγους μήνες μετά τη συμφωνία Ισραήλ-Κύπρου και την τελευταία κατάθεση των συντεταγμένων του Λιβάνου στον ΟΗΕ, η κυβέρνηση του Λιβάνου έλαβε ανάλυση

εμπειρογνωμόνων και αναλύσεις σχετικά με τα διαγράμματα του Υδρογραφικού Γραφείου του Ηνωμένου Βασιλείου – που θεωρείται από καιρό το χρυσό πρότυπο της θαλάσσιας χαρτογραφίας – για την περιοχή. Αυτό που βρήκαν οι ειδικοί είναι ότι τόσο ο Λίβανος όσο και το Ισραήλ είχαν χρησιμοποιήσει εσφαλμένες συντεταγμένες ως σημεία εκκίνησης για τα θαλάσσια σύνορά τους (βλ. Συνημμένο χάρτη): όπου τέτοια σημεία πρέπει να βρίσκονται στην ακτογραμμή, και οι δύο χώρες είχαν τοποθετήσει δεκάδες μέτρα υπεράκτια. Αυτό μπορεί να μην ακούγεται πολύ σημαντικό, αλλά τη στιγμή που μια γραμμή που χαράσσεται προς τη θάλασσα από ένα τόσο αδύνατο σημείο εκκίνησης φτάνει σε αυτό που θα έπρεπε να είναι η σύζευξη – όπου συναντώνται οι ΑΟΖ της Κύπρου, του Ισραήλ και του Λιβάνου – το σφάλμα μπορεί να ανέλθει σε αρκετά ναυτικά μίλια. Εξ υπαρχής, τόσο ο Λίβανος όσο και το Ισραήλ έχουν βασίσει τους προηγούμενους ναυτικούς ισχυρισμούς τους σε ελαττωματικές συντεταγμένες, κάτι που καθιστά τα πάντα που συνεπάγονται από αυτά ξεπερασμένα, αυτό που οι Γάλλοι θα αποκαλούσαν «caduc» – που σημαίνει άκυρο. Και στους δύο, αυτό παρέχει όχι μόνο δικαίωμα ενημέρωσης των αξιώσεών τους ενώπιον του ΟΗΕ, αλλά και υποχρέωση να το πράξει βάσει του συμφέροντος κάθε πλευράς. Επιπλέον, η πρόσφατη εμπειρία δείχνει ότι, ειδικά με τέτοια στοιχεία οι αντίστοιχοι ισχυρισμοί τους ήταν λάθος, εάν οι τρέχουσες συνομιλίες απέτυχαν και οι δύο χώρες πήγαν στο δικαστήριο ή σε διαιτησία για το ζήτημα, το πρώτο πράγμα που τους ζητήθηκε θα ήταν να αντικαταστήσουν το ελαττωματικούς χάρτες πραγματοποιώντας λεπτομερείς έρευνες και αναλύσεις για τον ακριβή προσδιορισμό τυχόν σημείων διαφωνίας. Από τεχνική άποψη, τότε, ναι, ο Λίβανος πρέπει σίγουρα να κινηθεί γρήγορα για να ενημερώσει για τις συντεταγμένες που είχε προηγουμένως καταθέσει στον ΟΗΕ. Αλλά και άλλες σκέψεις πρέπει επίσης να σταθμιστούν. Για παράδειγμα, ενώ ο Λίβανος είναι κυρίαρχη χώρα, δεν μπορεί να αγνοήσει εντελώς τις θέσεις εξωτερικών παραγόντων. Όταν αυτοί έρχονται σε αντίθεση με τις δικές του επιθυμίες και ανάγκες, πρέπει να σταθμίζει τα υπέρ και τα κατά και να αποφασίζει ανάλογα. Σε αυτήν την περίπτωση, Ισραηλινοί αξιωματούχοι προσπάθησαν να αποθαρρύνουν τον Λίβανο να

καταθέσει τις συντεταγμένες ή να καθυστερήσουν με άλλο τρόπο την επανάληψη των προαναφερθεισών συνομιλιών, αυξάνοντας την προοπτική ότι κάτι τέτοιο θα μπορούσε να αποτρέψει την πρόοδο, να επιδεινώσει τις εντάσεις και να αναγκάσει μια μεγαλύτερη αναμονή για οποιαδήποτε υπεράκτια ανάπτυξη πετρελαίου και φυσικού αερίου. Το τελευταίο σημείο θα μπορούσε να έχει ιδιαίτερη σημασία λόγω της σημασίας μιας ενεργειακής έκρηξης για τον πληθυσμό του Λιβάνου. Η οικονομία του Λιβάνου έχει συρρικνωθεί κατά περίπου 25% κατά το παρελθόν έτος, μετά την αθέτηση χρεών που οδήγησε στην κατάρρευση του νομίσματος και στις αυξήσεις των τιμών καταναλωτή που χαρακτηρίζονται ως υπερπληθωρισμός. Ακόμη χειρότερα, η πολιτική τάξη έχει δείξει λίγο στομάχι για τα είδη των μεταρρυθμίσεων που απαιτούνται για την εξασφάλιση διάσωσης από το Διεθνές Νομισματικό Ταμείο (ΔΝΤ). Το σημερινό υπουργικό συμβούλιο, με επικεφαλής τον πρωθυπουργό Χασάν Ντιάμπ, παραιτήθηκε πριν από επτά μήνες για μια έκρηξη στο λιμάνι της Βηρυτού που κατέστρεψε δεκάδες χιλιάδες σπίτια, οπότε λειτουργεί υπό την επίβλεψη. Ο διορισμένος διάδοχός του είναι επίσης ο προκάτοχός του, ο πρώην πρωθυπουργός Saad Hariri, ο οποίος παραιτήθηκε ο ίδιος ενόψει λαϊκών διαμαρτυριών που κατέλαβαν τη χώρα στα τέλη του 2019. Ενώ απολαμβάνει σημαντική υποστήριξη σε ορισμένες ξένες πρωτεύουσες, η εσωτερική θέση του Hariri μπορεί να χαρακτηριστεί μόνο ως αδύναμη, και το απλό γεγονός ότι δεν μπόρεσε να σχηματίσει υπουργικό συμβούλιο μετά από περισσότερο από μισό χρόνο αφήνει λίγη αμφιβολία ότι ακόμα κι αν το καταφέρει, θα είναι σε μεγάλο βαθμό ανίκανος να λάβει αποφασιστική δράση σε σημαντικά ζητήματα. Έχουμε λοιπόν ένα άλλο ερώτημα: πρέπει ο Λίβανος να παραιτηθεί από ορισμένα από τα δικαιώματά του για να επιταχύνει μια συμφωνία που του επιτρέπει να αρχίσει να κερδίζει κάποια απαραίτητα έσοδα από υπεράκτιους πόρους; Η απάντηση σε αυτό πρέπει να είναι ένα ηχηρό «όχι». Η συνοριακή περιοχή περιέχει μερικές από τις πιο υποσχόμενες υπεράκτιες εκτάσεις του Λιβάνου και, εν πάση περιπτώσει, δεν υπάρχει καμία εγγύηση ότι η παραίτησή της θα λειάνει το έδαφος για μια διπλωματική ανακάλυψη – και ακόμη και αν το έκανε, η εξωτερική επένδυση που απαιτείται για να

ανεβάσει μια ενεργειακή βιομηχανία και η εργασία εξαρτάται από μια ολόκληρη σειρά προϋποθέσεων, ιδίως από τις μεταρρυθμίσεις που κανείς δεν μπόρεσε να αντιληφθεί. Επίσης, εκτός από την ανάλυση του 2011, οι ένοπλες δυνάμεις του Λιβάνου πραγματοποίησαν δικές τους λεπτομερείς μελέτες, οι οποίες έχουν ενισχύσει σημαντικά τη θέση του Λιβάνου. Οι ανώτεροι αξιωματικοί της LAF έχουν επίσης απαλλαγεί από υψηλό βαθμό επαγγελματισμού στον διαμεσολαβητικό διάλογο των ΗΠΑ με τους Ισραηλινούς. Σε συνδυασμό με τις πρόσφατα κατατεθείσες συντεταγμένες, η ποιότητα του έργου της LAF ενδέχεται να επιταχύνει τη διαδικασία διαπραγμάτευσης αποδεικνύοντας ότι η λιβανική πλευρά δεν θα φουσκώσει, αλλά ούτε θα εκφοβιστεί ούτε θα εκνευριστεί. Κανείς δεν περιμένει ότι η Ουάσινγκτον θα εγκαταλείψει τη στενή σχέση της με το Ισραήλ, αλλά η προσέγγιση της LAF για όλες τις επιχειρήσεις, που δεν έχουν υποστεί απώλειες από τις αντιξοότητες της λιβανικής πολιτικής, ενθαρρύνει τους Αμερικανούς να είναι όσο το δυνατόν πιο συνεργάσιμοι. Και πάλι, η υπόθεση για έγκαιρη και αποφασιστική τροποποίηση της κατάθεσης των συντεταγμένων του Λιβάνου φαίνεται δικαιολογημένη, αλλά μόνο εάν το ζήτημα μπορεί να αναχαιτίσει τη δυσλειτουργική πολιτικής του Λιβάνου. Δεδομένης της ιστορίας της πολιτικής του Λιβάνου, είναι φυσικό ότι ακόμη και οι καλοί καλοί παίκτες θέλουν να διασφαλίσουν ότι έχουν επαρκή πολιτική κάλυψη πριν κάνουν οποιαδήποτε σημαντική κίνηση. Αν και αυτό είναι σίγουρα ένα βήμα συνέπειας, ωστόσο, τα πλεονεκτήματά του είναι τόσο προφανή που πρέπει να απαιτούν μόνο γραφειοκρατική ή και νομική πρωτοβουλία από τα κατάλληλα άτομα στο Υπουργείο Εξωτερικών. Το γεγονός ότι απαιτεί υψηλότερη εξουσιοδότηση δεν θα πρέπει να αποτελεί δικαιολογία για μια ακόμη αντιπαράθεση θάρρους ή δειλίας, που έχουν αποξενώσει, απογοητεύσει, φτωχύνει και έχουν κυριολεκτικά σκοτώσει εκατοντάδες χιλιάδες Λιβανέζους τον τελευταίο μισό αιώνα. Αντίθετα, πρέπει να παρακινήσει τους αξιωματούχους να γίνουν δημιουργικοί για το πώς να σημειώσουν πρόοδο σήμερα χωρίς να αφήσουν τους ανθρώπους να αναβάλλουν για αύριο. Υπάρχουν τρόποι συμβιβασμού στη διαδικασία χωρίς να θυσιάσουμε τη λογοδοσία, την ακεραιότητα ή τη διαφάνεια και τα

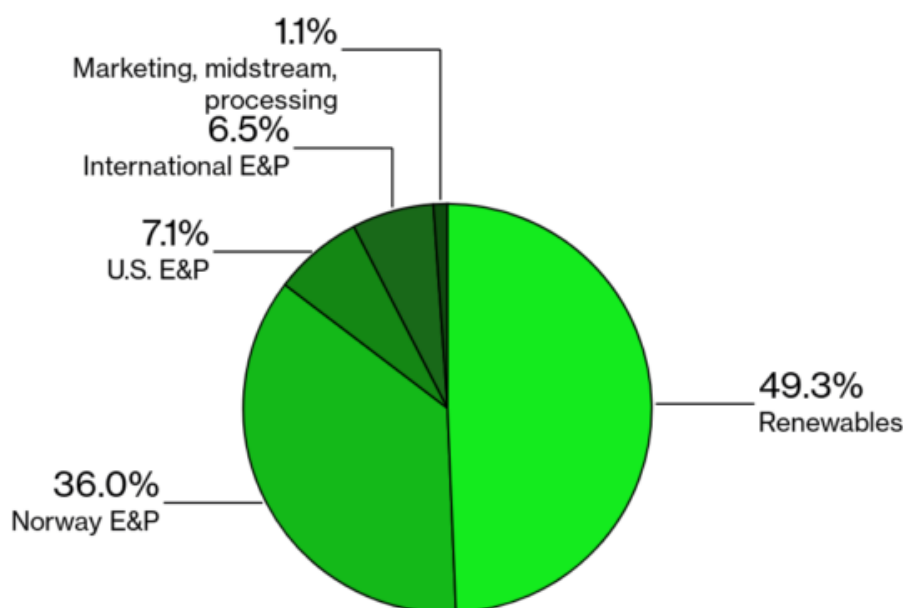
διακυβεύματα είναι τόσο υψηλά που η εύρεση μιας τέτοιας φόρμουλας θα αξίζει ό, τι προσπάθεια απαιτεί. Και για μια φορά, ο λαός του Λιβάνου μπορεί να πιστεύει ότι οι ηγέτες του ενεργούν για καθαρά εθνικούς λόγους και όχι προσωπικούς.

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## How an Oil Company Becomes a Renewables Company

### How to Earn \$2.6 Billion

Equinor 1Q 2021 earnings by segment



Source: Equinor, Bloomberg

Note: E&P is exploration and production. Earnings omit \$53 million loss from "other"

**Bloomberg Green**

Last week a raft of oil majors released their first-quarter results, with companies like Royal Dutch Shell Plc showing a return to pre-pandemic profit levels. At the same time, some of the majors increased their energy transition commitments: as my Bloomberg Intelligence colleagues Salih Yilmaz and Will Hares noted on Twitter, Spanish firm Repsol SA devoted 40% of

its capital expenditure to low-carbon projects, and France's Total SE stated plans to increase its renewable energy capacity five-fold over the next four years.

There are energy-transition commitments, though, and then there are energy-transition results. And on the latter side, one company shines: Norway's state-owned oil producer, Equinor ASA. It posted more than \$2.6 billion of earnings in the first quarter of 2021, 49% of which was from renewable energy. Last quarter, Equinor earned more from renewables than it did from oil and gas exploration and production.

But Equinor's results are more than evidence of a successful renewable-energy strategy. They're also a sign of the challenge ahead for other oil majors with similar ambitions.

Equinor's capital gains in renewables came from "farm downs," i.e. the selling of assets at various stages of development to new owners. (Another term for farm down is "asset rotation," which I discussed last week.) Equinor divested a 50% interest in two U.S. offshore wind projects and a 10% interest in two U.K. offshore wind farms. While asset rotation is slowing down in the power utility sector, it seems to be working fine for Equinor.

More interesting than the farming down itself is who Equinor is farming down to: two other European oil majors! BP Plc is buying into the U.S. projects, and Italy's Eni SpA is buying into the U.K. projects—or in other words, BP and Eni are paying Equinor for the privilege of taking on the earlier stages of developing offshore wind.

Therein lies the challenge for Big Oil's energy transition plans. Equinor's way to benefit from renewable-energy assets is, essentially, to put in the early work of developing them—and then reap the cash benefits of selling them to others.

Importantly, early wind development is more time-dependent and expertise-dependent than it is capital-dependent. Equinor's

U.S. wind assets are the result of its success in the country's 2018 offshore-lease auction, when it won stakes with a bid of \$135 million. In its latest earnings statement, the company says BP paid \$1.2 billion for those same assets, netting the Norwegian company \$1 billion on the deal.

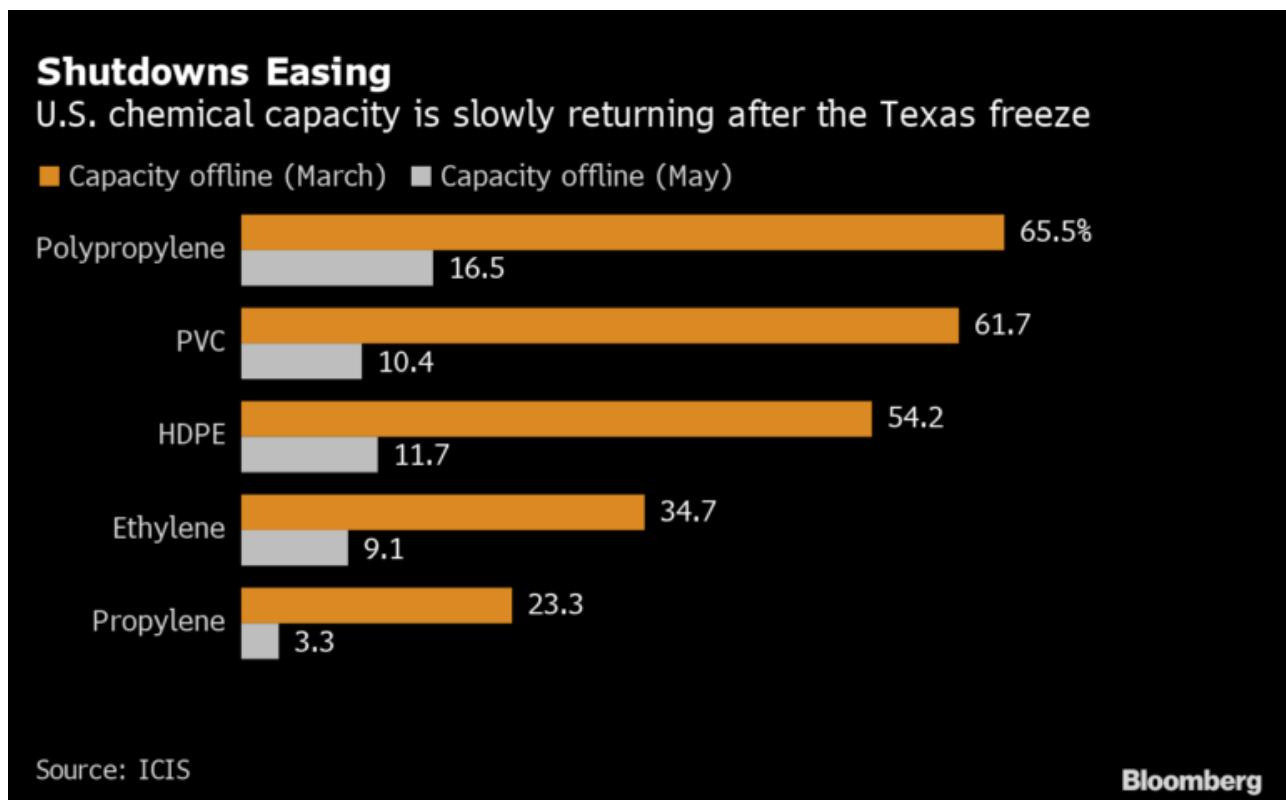
Equinor is a special creature in a few ways. First, one of the reasons it could be an early developer of U.S. offshore wind is that it has decades of experience developing and operating offshore oil and gas assets. Other oil majors (in particular BP) can claim the same expertise, but Equinor seems particularly adept at it.

Second, the company is two-thirds owned by the Kingdom of Norway, with Norway's Government Pension Fund Global, also known as Norges Bank, owning another 3.59% of the company via Folketrygdfondet, which is authorized to invest 85% of its funds in Norwegian companies. Not only is the government a particularly patient and committed shareholder, it also has a hand in its portfolio companies' strategies. The Folketrygdfondet "has an interest in an orderly transition in line with the Paris Agreement" and expects that its portfolio companies "integrate climate change considerations into policies and strategy."

So to recap: Norway reinvests its state-oil company's revenues back into said oil company, while also helping drive said oil company's energy transition strategy. As Equinor's first-quarter results show, all of this effort and coordination has made it possible for an oil company to get half its revenues from renewable energy, at least for now. Other oil majors reaching for that same brass ring will have their work cut out for them, certainly—and may continue to resort to buying assets from each other in their quest to get there.

*Nathaniel Bullard is BloombergNEF's Chief Content Officer.*

# Big Oil's Chemical Profits Show Inflationary Double Whammy



(Bloomberg) – Drive down any highway in the world and you'll see countless reminders that the price of Big Oil's primary product is rising. What's less obvious is how the inflationary pressures from transport fuel are being amplified by another part of this sprawling industry – chemicals.

The cost of the building blocks for everything from plastics to paint has surged over the past year. That's great for companies like Exxon Mobil Corp. and Royal Dutch Shell Plc, whose petrochemical units just earned their biggest profit in years.

But it's unwelcome news for consumers as commodities from

copper to lumber are already testing record highs. The price of materials like PVC and ethylene, staples of construction and manufacturing, have risen to the highest in at least seven years on a combination of pandemic-driven demand, the broader post-Covid recovery and once-in-a generation supply disruptions.

"The demand is coming from food, packaging, medical goods, protective equipment," said Oswald Clint, senior research analysts at Sanford C Bernstein Ltd. "Does it add to inflation? Yes."

Oil has advanced steadily this year, coming within a whisker of \$70 a barrel in London this week. Yet even as higher crude prices boosted earnings from the oil majors' exploration and production units, the performance of their petrochemical businesses really stood out.

In the first three months of this year, Exxon made \$1.4 billion from chemicals, more than in any quarter since at least 2014, when oil prices were above \$100 a barrel. More than a fifth of Shell's \$3.23 billion of adjusted net income for the period came from the division, the highest in four years.

## Global Winners

It's not just the oil majors seeing sales surge. Chemicals was the fastest growing unit at Indian conglomerate Reliance Industries Ltd. in the first three months of 2021, compared with the prior quarter.

Other winners from the boom include Brazil's Braskem SA, Indorama Ventures PCL from Thailand, Celanese Corp., Dow Inc. and LyondellBasell Industries NV in the U.S., and Saudi Basic Industries Corp., according to Jason Miner, Bloomberg Intelligence chemicals analyst.

"It's a story of the strength of the intermediates," Shell

chief financial officer Jessica Uhl told investors on April 29, referring to compounds that are derived from basic petrochemical feedstocks. Demand is growing as the economy recovers, notably in Asia, she said.

For example, the price of styrene monomer – used in medical devices and latex – surpassed \$1,000 a ton in the first quarter, Uhl said. The average price of the chemical at the port of Rotterdam in the Netherlands was about \$700 a ton in 2020, according to data compiled by Bloomberg.

The global vaccination drive and large stimulus packages are boosting consumer sentiment and demand from health care, packaging, consumer durables, textiles and automobiles, Reliance said in its earnings presentation last week. Demand for polymers and polyesters has been particularly strong in India, it said.

### Trouble in Texas

This isn't just a story about strong demand. The chemicals industry is also just coming back from several major supply disruptions.

Back-to-back hurricanes on the U.S. Gulf Coast last year were followed by unusually cold weather in February, which knocked out much of the electricity grid in Texas and forced giant petrochemical facilities to shut down. Two months later, many are still not back working at full-capacity.

The region has become a dominant player in the world's plastics trade thanks to natural gas liquids – a cheap petrochemical feedstock – coming out of the Texas shale boom. For example, North America is the world's biggest producer of high-density polyethylene, used in everything from shampoo bottles to snowboards. It's also the largest exporter of PVC.

"The big freeze sent a shockwave through global petrochemical markets," Vienna-based consultant JBC Energy GmbH said in a

note. While almost all of the plants that were disabled by the weather have been brought back online, inventories of many chemicals are still low, keeping prices elevated, it said.

The price of ethylene, the chemical building block for everything from plastics to solvents, reached a seven-year high of 59.5 cents a pound in March, according to ICIS, a data and analytics provider. PVC reached a record high of \$1,625 a ton that month.

Even recycled plastic is in high demand, with the price of polyethylene terephthalate, or PET, used for drinks bottles and packaged food, reaching a 10-year high of 1,250 euros (\$1,519) a metric ton in northwest Europe on Wednesday, according to S&P Global Platts. The price remained at that level Friday.

"If you were able to get back up and running quickly after the storm" you found a marketplace desperate for your product that "would almost pay any price to get it," said Jeremy Pafford, head of North America at ICIS.

The tight supply and demand balance for many chemicals looks set to continue in the second quarter, Exxon Chief Executive Officer Darren Woods said on a call with analysts last week. Dow and LyondellBasell have said they are currently selling everything they produce and don't anticipate being able to restock inventories until the third or fourth quarter.

To manufacture enough chemicals to satisfy customer demand and start building up its stockpiles again, the U.S. needs "four dull months" without any further disruption, said Pafford.

But hurricane season is just around the corner, and the global economy does not have time on its side.

The world is expected to see a surge in spending in the coming months as many countries end their lockdowns and cooped-up consumers dip into their savings or stimulus checks. That

could happen alongside the continuation of pandemic-driven trends such as high demand for plastic medical goods as new strains of Covid-19 trigger fresh outbreaks around the world.

“Demand for personal protective equipment is unlikely to fade soon,” said Armaan Ashraf, an analyst at consultant FGE. “E-commerce, retail, durable goods demand is also likely to remain strong through the rest of this year as well.”

(Updates PET price in 17th paragraph)

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## **Saudi cuts oil prices for Asia as India battles virus**



Bloomberg / Dubai

Saudi Arabia lowered oil prices for customers in its main market of Asia as a surge in coronavirus cases crimps demand in India, the world's third-largest crude importer.

The kingdom's state energy firm, Saudi Aramco, reduced pricing for June shipments to the continent by between 10 and 30 cents per barrel.

The key Arab Light grade for Asia was cut to \$1.70 a barrel above the benchmark from \$1.80 for May. That's the first reduction in official selling prices for the grade since December, signalling weakness in Asian oil markets.

The reductions had been anticipated in the market. Aramco had been expected to lower Arab Light's premium by 20 cents, according to a Bloomberg survey of seven traders and refiners. Saudi Energy Minister Prince Abdulaziz bin Salman has urged fellow members of Opec+ to be cautious as the group eases supply cuts started last year when the pandemic was hammering energy markets. The 23-nation alliance plans to increase daily output by just over 2mn barrels through to July, beginning with 600,000 this month. That would still leave production roughly 5mn barrels a day below pre-pandemic levels.

Aramco raised pricing to the US by 20 cents a barrel for all grades. The nation is adding jobs amid economic growth and a push for widespread vaccinations. The company cut pricing for all shipments to Northwestern Europe and the Mediterranean, where efforts to bolster the economy and ease lockdowns have met with mixed results.

Brent crude has climbed almost 35% this year, closing in on \$70 a barrel as vaccination rollouts enable the US, Europe and some other major economies to reopen. Aramco chief executive officer Amin Nasser said on Tuesday he's more optimistic about the outlook for oil.

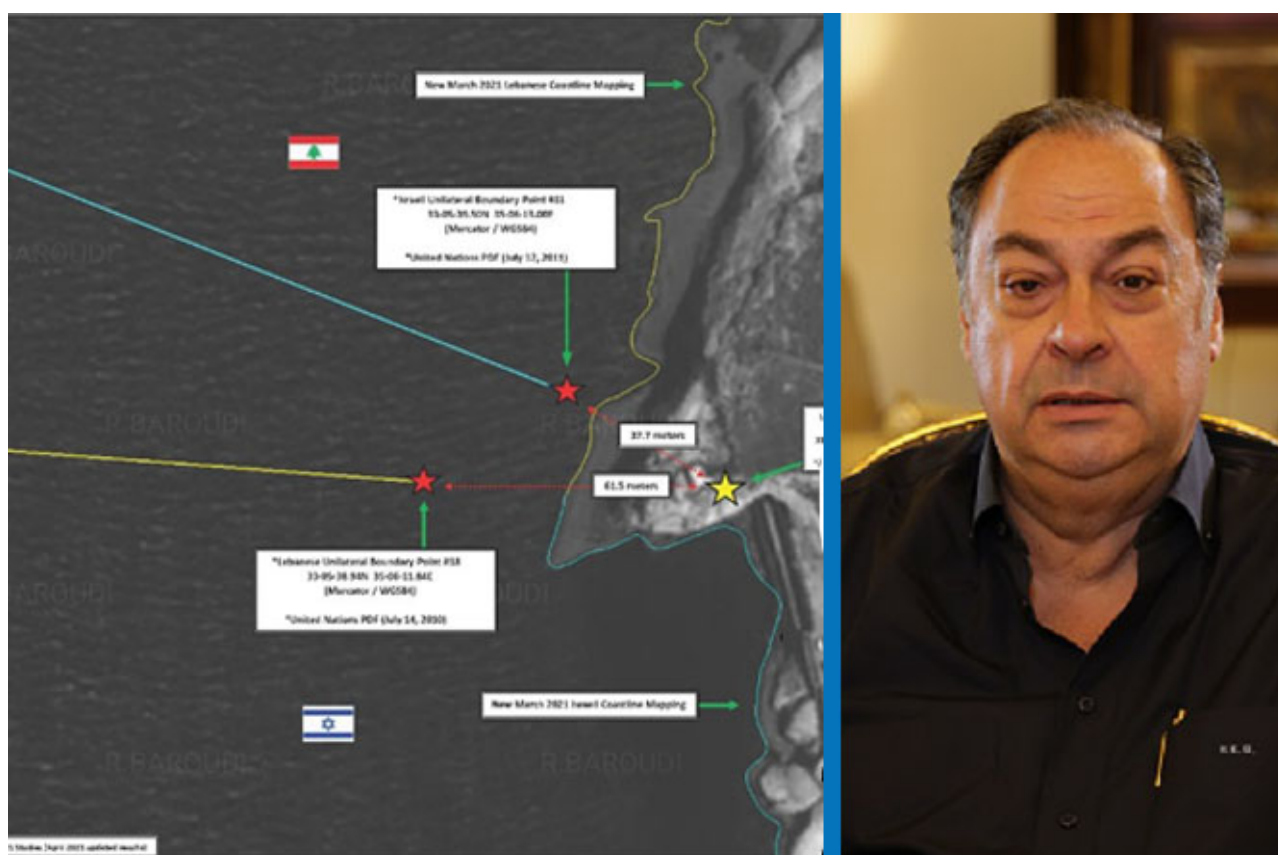
Still, the pandemic has rapidly worsened in India since the start of April. The country is now reporting around 400,000 cases every day.

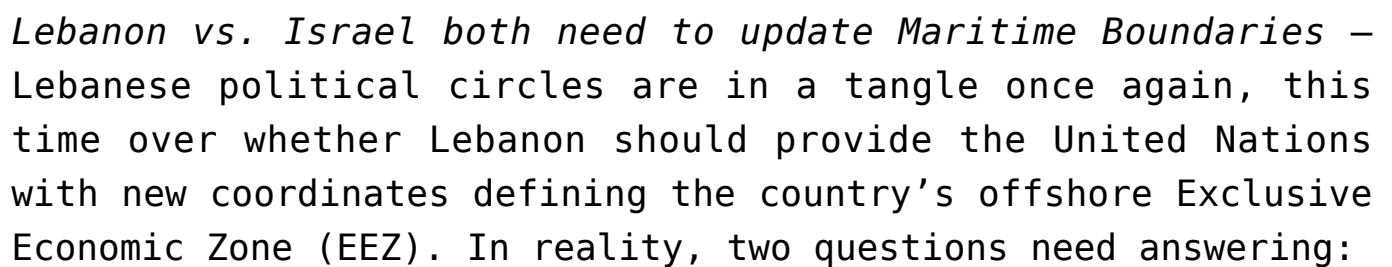
Most Middle Eastern countries set monthly prices as a premium or discount to a benchmark. Aramco's OSPs serve as a

bellwether for oil markets and often lead the pricing trend in the region. Abu Dhabi issued its first OSP based on trading in crude futures this month, a step in its efforts to establish its oil as the regional benchmark.

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## Lebanon vs. Israel both need to update Maritime Boundaries





- 1) Does Lebanon have the right to update its maritime claims to the UN?
- 2) If so, should Lebanon avail itself of that right in the present circumstances?

The issue is of critical importance, not only because it relates directly to Lebanon's (currently stalled) maritime boundary talks with Israel, but also because it stands to impact the speed with which it can begin to obtain tangible benefits from any undersea hydrocarbons within its EEZ.

Helpfully, the first question is the easiest. Lebanon's right to update its territorial submissions to the UN is not only enshrined in the UN Convention on the Law of the Sea (UNCLOS), but also protected by Customary International Law (CIL), and

established by innumerable precedents as a standard practice of countries seeking to define and defend their maritime claims, not least because continual technological advance allows increasingly accurate mapping.

It is important to note, too, that Presidential Decree 6433 of 2010, under which Lebanon's claim was last expressed to the UN, expressly envisaged the possibility of future updates. Article 3 leaves no room for interpretation whatsoever, reading: "As needed, and in the light of negotiations with the relevant neighboring States, the borders of the exclusive economic zone may be refined and improved and, consequently, the list of its coordinates amended, if more precise data becomes available." Lest there be any doubt, and as we will see below, such data has become available.

What is more, when Lebanon's Permanent Mission to the UN submitted the claims authorized under Decree 6433, its accompanying letter included the following advisory: "There is a need to conduct a detailed survey, using a global positioning system, of the shore contiguous to the southern limit, including all islands and spurs, with a view to updating the nautical charts and the baseline accordingly in the future." Again, to be perfectly clear: such survey work has been conducted.

Also, while Israeli officials have sought (not very convincingly) to question Lebanon's right to update its claim, their country's own October 2010 EEZ agreement (itself based on Israeli coordinates which we now know to be incorrect and which would therefore be rejected by any court or tribunal) with Cyprus also expressly recognizes the fact that under CIL, such coordinates are subject to change. Article 1 (e) of that agreement reads as follows: "Taking into consideration the principles of customary international law relating to the delimitation of the Exclusive Economic Zone between States,

the geographical coordinates of points 1 or 12 could be reviewed and/or modified as necessary in light of a future agreement regarding the delimitation of the Exclusive Economic Zone by the three States concerned with respect to each of the said points.”

In addition, in a subsequent unilateral submission to the UN, Israel’s own mission to the world body not only referred to “the relevant provisions of Article 1 (e)”, but also reproduced the language, virtually verbatim. The submission even repeated mention of “the three States concerned”, which in context can only indicate Lebanon as the third state.

On Lebanon’s right to submit new coordinates, then, the verdict is inescapable: it definitely has that right. Realistically, anyone who argues otherwise is either opposed to the best interests of Lebanon (which needs to develop this resource), the Lebanese (who deserve to reap the attendant economic rewards), and the Lebanese Armed Forces (which are heavily invested in a positive outcome); ignorant of the facts and the rules; or pursuing some other political, financial, and/or other personal/partisan advantage.

Next question: should Lebanon exercise its right at this particular juncture?

On the surface, this answer is almost as clear. In 2011, just months after the Israel-Cyprus deal and Lebanon’s last submission to the UN, the Lebanese government received expert analysis and advice regarding the United Kingdom Hydrographic Office charts – long considered the gold standard of maritime cartography – for the area. What the experts found is that both Lebanon and Israel had used erroneous coordinates as starting points for their maritime boundaries (please see attached map): where such points should be situated at the shoreline, both countries had placed them dozens of meters offshore. This may not sound like much, but by the time a line drawn out to sea from such a misplaced starting point reaches

what should be the trijunction – where the EEZs of Cyprus, Israel, and Lebanon meet – the error could amount to several nautical miles.

Ipsso facto, both Lebanon and Israel have based their previous maritime claims on faulty coordinates, which makes everything that flows from them obsolete, what the French would call “caduc” – meaning null and void. To both, this imparts not only a right to update their claims before the UN, but also an obligation to do so based on each side’s own best interest. In addition, recent experience demonstrates that, especially with such evidence that their respective claims were fatally flawed, if the current talks failed and the two countries went to court or arbitration over the issue, the first thing asked of them would be to replace their faulty maps by carrying out detailed surveys and analyses in order to precisely determine any points of contention.

In the technical sense, then, yes, Lebanon should definitely move quickly to update the maritime claims it has previously submitted to the UN. But other considerations also need to be weighed.

For instance, while Lebanon is a sovereign country, it cannot afford to entirely ignore the positions of outside actors. When these run contrary to its own wants and needs, it must weigh the pros and cons and decide accordingly. In this instance, Israeli officials have sought to discourage Lebanon from updating its claims or otherwise delaying the resumption of the aforementioned talks, raising the prospect that doing so could forestall progress, worsening tensions and forcing a longer wait for any offshore oil and gas development.

The latter point could be of particular significance because of what an energy boom could mean for the Lebanese population. Lebanon’s economy has shrunk by an estimated 25% over the past year, following a debt default that led to the collapse of its currency and consumer price increases that qualify as

hyperinflation. Worse, the political class has demonstrated little stomach for the kinds of reforms required to secure a bailout by the International Monetary Fund (IMF).

The current Cabinet, led by Prime Minister Hassan Diab, resigned seven months ago over an explosion at the Port of Beirut that damaged or destroyed tens of thousands of homes, so it operates in a caretaker capacity. His designated successor is also his predecessor, former Prime Minister Saad Hariri, who himself resigned in the face of popular protests that gripped the country in late 2019. While he enjoys considerable support in certain foreign capitals, Hariri's domestic position can only be described as weak, and the mere fact that he has been unable to form a Cabinet after more than half a year leaves little doubt that even if he succeeds, he largely will be incapable of decisive action on significant issues.

So we have another question: should Lebanon forego some of its rights in order to hasten an agreement that allows it to start earning some badly needed revenues from offshore resources?

The answer to that should be a resounding "no". The border area contains some of Lebanon's most promising offshore acreage, and in any event, there is no guarantee that giving it up would grease the wheels for a diplomatic breakthrough – and even if did, the outside investment required to get an energy industry up and running depends on a whole other set of prerequisites, not least the reforms that no one has been able to see through.

Also, in addition to the 2011 analysis, the Lebanese Armed Forces have carried out detailed studies of their own, which have significantly strengthened the Lebanese position. Senior LAF officers also have acquitted themselves with a high degree of professionalism in their US-mediated dialogue with the Israelis. In tandem with newly deposited coordinates, the quality of the LAF's work might actually hasten the

negotiating process by demonstrating that the Lebanese side will not bluster, but nor will it be bullied or bamboozled. No one expects that Washington will abandon its close relationship with Israel, but the LAF's all-business approach, unsullied by the vagaries of Lebanese politics, encourages the Americans to be as even-handed as possible.

Again, the case for a timely and assertive amendment of Lebanon's maritime submission seems airtight, but only if the issue can be inoculated against Lebanon's dysfunctional politics.

Given the history of Lebanese politics, it is natural that even good-faith actors want to ensure they have sufficient political cover before making any important move. While this is certainly a step of consequence, however, its merits are so obvious that it should require only a bureaucratic and/or legal decision by the appropriate people at the Foreign Ministry. The fact that it requires higher authorization should not be an excuse for yet another chicken-and-egg standoff along the lines of those that have alienated, frustrated, impoverished, and quite literally killed hundreds of thousands of Lebanese over the past half-century.

Rather, it should spur officials to get creative about how to make progress today without hanging people out to dry tomorrow. There are ways to compromise on procedure without sacrificing accountability, integrity, or transparency, and the stakes are so high that finding such a formula will be worth whatever effort it requires. And for once, the people of Lebanon might be able to believe their leaders are acting for purely national reasons, not personal ones.



*Roudi Baroudi has more than 40 years of experience in the energy business and has helped design policy for major international oil companies, sovereign governments, and multilateral institutions. He currently serves as CEO of Energy and Environment Holding, an independent consultancy based in Doha, Qatar.*

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**BP emerges as another big winner from Texas freeze**



(Bloomberg) – Two months on from the winter freeze that paralyzed Texas and sent electricity and gas prices soaring, another big winner has emerged.

BP Plc said Tuesday its gas trading unit had an “exceptional” first quarter, helping to drive profit well above pre-pandemic levels. While executives didn’t spell it out, all signs point to large gains from the frigid weather in Texas.

“It was a very exceptional quarter in gas trading,” Chief Executive Officer Bernard Looney said in an interview. “We were well-positioned for colder-than-normal weather in the U.S.,” as well as in Asia.

The London-based oil major doesn’t disclose trading results, but its quarterly earnings suggest the gas and power unit “easily topped \$1 billion,” according to Citigroup Inc. analyst Alastair Syme. “Although not mentioned by name, we think positioning around the February storm in Texas – Storm Uri – has been the biggest driver of these gains.”

The next-biggest supplier, Macquarie Group Ltd., also enjoyed a windfall from gas and power price swings, pocketing \$210 million. Other companies to profit included pipeline operator Kinder Morgan Inc., which reported a \$1 billion gain, and more

may emerge as earnings season progresses.

Yet among BP's oil peers, some have already flagged that their results will suffer from the deep freeze. Royal Dutch Shell Plc has warned its adjusted earnings will take a hit of about \$200 million, while Exxon Mobil Corp. expects profit to be curtailed by as much as \$800 million.

## Trading Giant

BP benefits from having one of the largest in-house trading units in the industry. Last year, the company offered a glimpse into just how profitable the secretive trading operation is: it boosts returns on average capital employed by around 2 percentage points, suggesting it brings in as much as \$2.5 billion a year.

On Tuesday, BP's executives batted away repeated questions from analysts calling for more details on the scale of the trading wins. "I don't really want to give up commercial advantage," Chief Financial Officer Murray Auchincloss said. "I don't think I'm going to go any further in describing what we do commercially. It's just not helpful to our traders."

For now, BP will only give a steer using adjectives such as average, strong or exceptional. The company has had three "exceptional" quarters in the past decade, the latest example – before the one just reported – being the second quarter of 2020, Auchincloss said.

The trading business will mostly remain a black box for investors and analysts, but Auchincloss said the company would "probably" give guidance on the unit's contribution to returns once a year, starting next February or March. Giving away more details than that would be a distraction, he said in an interview.

Analysts questioned whether the gains reflected an outsized appetite for risk in trading. But the CFO countered that the

successes were down to managing long and short positions, and arbitrage.

“We have a very, very strong and long history of knowing how to manage these disruptions and doing well,” he said. “And of course we had disruptions in the first quarter in Asia and the United States.” ©2021 Bloomberg L.P.

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## Malaysia expert calls for ‘clear, comprehensive’ national energy policy



A clear and comprehensive National Energy Policy (NEP) will serve a vital role in countries’ economic growth and energy transition, especially in the face of mounting uncertainties, a senior gas industry official from Malaysia has said.

Speaking at the 52nd edition of the GECF Gas Lecture Series, entitled ‘Collaborative Government-Association Synergy for a

Sustainable and Vibrant Gas Industry', Hazli Sham Kassim, president, Malaysian Gas Association (MGA), noted that Malaysia's NEP is expected to be launched in the second half of 2021 with an aim to ensuring sub-sector energy development is aligned with the global energy transition trend.

"We anticipate that the National Energy Policy, currently undertaken by the Malaysian Government, will determine long-term strategies surrounding the national energy sector. It will address in depth cleaner energy sources including renewables and natural gas and ensure that all aspects related to the energy sector and environmental sustainability can also be better addressed," said Kassim, whose association estimates that energy – precisely natural gas – contributes as much as 12% to the GDP of Malaysia, one of the 19 member states of the GECF.

"Natural gas will play an even more critical role in facilitating energy transition. We look forward to the completion of Malaysia's 'Natural Gas Roadmap' that we understand has been designed to optimise the value of indigenous natural gas resources, enhance security of supply through identifying new growth areas and at the same time ensuring a sustainable gas industry in Malaysia."

GECF secretary-general Yury Sentyurin noted that Malaysia, like many of the Forum's member countries from Russia to Qatar, is showcasing that only a holistic approach can address the three intertwined concerns of energy security, affordability, and sustainability.

"The road to recovery does not just depend on the outcome of the battle between the virus and the vaccines – it also hinges on how governments around the world deploy their policies and policy support to all economic sectors," Sentyurin said.

"This highlights the role of government-enterprise synergy to drive forward the agenda and shape opportunities."

Malaysia enjoys 42tn cubic feet of proven natural gas reserves that have enabled it to fuel its economic growth since the 1980s. Indigenous natural gas has also enabled Malaysia to become the fifth largest exporter of LNG, although in recent

years the country has resorted to importing natural gas due to surging demand.

According to Kassim, as the cleanest fossil fuel, natural gas is expected to complement the growth of renewable energy. 2021 figures show that the contribution of combined gas and renewable energy in Peninsular Malaysia will increase by more than 11GW whilst coal will decline by more than 4GW by 2039. As a result, gas demand will increase threefold and carbon emission intensity from the power generation sector is set to reduce by more than 60% within the same period compared to the 2005 levels.

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## **Opec+ sticks to plan to ease oil output cuts from May 1**



Reuters/Dubai/Moscow/London

Opec, Russia and their allies will stick to plans for a phased easing of oil production restrictions from May to July amid

upbeat forecasts for a recovery in global demand and despite surging coronavirus cases in India, Brazil and Japan.

The group known as Opec+ ditched plans to hold a ministerial meeting on Wednesday, four Opec+ sources said, following Tuesday's meeting of ministers who are members of a market monitoring panel.

The panel decided to stick to policies broadly agreed at a previous April 1 meeting of Opec+, Russian Deputy Prime Minister Alexander Novak said after the talks.

He said the next Opec+ ministerial meeting was scheduled for June 1 to review output levels for July and August.

An Opec+ statement also confirmed the June 1 date for the next meeting.

Opec+, which is responsible for more than a third of global production, has cut output by around 8mn barrels per day (bpd), equivalent to over 8% of global demand.

The reduction includes a 1mn bpd voluntary cut by Saudi Arabia. At the April 1 meeting, the group agreed to bring 2.1mn bpd back to the market from May to July, easing cuts to 5.8mn bpd.

In a report by Opec+ experts, the group forecast global oil demand in 2021 would grow by 6mn bpd, after falling 9.5mn bpd last year.

But the group said that, even though more than 1bn Covid-19 vaccine doses had been administered globally, it was concerned that surges in new virus cases in India, Brazil and Japan might derail recovering demand for crude.

Oil prices rebounded on Tuesday after falling the previous session, with gains capped by growing concern about fuel demand in India, the world's third-biggest crude importer.

The Opec+ report said it expected commercial oil stocks to reach 2.95bn barrels in July, taking them below the 2015-2019 average, and expected them to remain below that average for the rest of the year.

It said it saw stocks at about 70mn barrels below the average for the whole of 2021, a more optimistic outlook than its previous forecast of 20mn barrels below the average.

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# Getting to zero deforestation in the Amazon by 2030



Amazon deforestation in Brazil reached a 12-year high in 2020, and over 95 per cent of it is illegal. Governments and markets must radically revalue the rainforest's natural services and stimulate a green economy to avoid a nightmare scenario.

The Amazon Basin is fast approaching an irreversible tipping point. That should concern everyone, because what happens in the Amazon has planetary implications.

Spanning eight South American countries and French Guiana, the Amazon contains over 60 per cent of the world's tropical forests, 20 per cent of its fresh water, and about 10 per cent of biodiversity.

As a result of land speculation and insatiable global demand for meat, soy, gold, and other commodities, roughly 20 per cent of the world's largest tropical forest has already been razed.

A further 5 per cent rise in deforestation levels could trigger catastrophic dieback, essentially dooming the 2015 Paris climate agreement.

Some fear this process may already have started. The current prognosis is not good: Amazon deforestation in Brazil reached a 12-year high in 2020, and over 95 per cent of it is illegal.

Unless governments and markets radically revalue the rainforest's natural services, this nightmare scenario may be unavoidable.

Dieback in the Amazon Basin could release the equivalent of a decade's worth of global greenhouse-gas emissions. The forest would also lose its ability to absorb billions of tons of carbon dioxide, disrupting hydrological cycles, evapotranspiration, and ocean currents.

The agro-industrial sector could collapse, and the loss of biodiversity could be staggering. Hydroelectric facilities would be shuttered, declining water tables would make cities unlivable, and fisheries would become unviable.

Preventing this outcome requires achieving zero deforestation in the Amazon by 2030. And that, in turn, requires a clearheaded scientific assessment and science-based targets.

The Science Panel for the Amazon, a coalition of about 200 leading scientists from the region, should become permanent. And, given the extraordinary wealth potential of preserving the forest's biodiversity, the best way to protect this resource is by stimulating the emergence of a green economy.

For starters, this will require a crackdown on illegal deforestation and the networks that sustain it. Brazil's environmental enforcement agency, Ibama, handed out 20 per cent fewer fines in 2020 than in 2019, owing to funding cuts and reduced sanctions – and less than 3 per cent of fines are paid.

Reinforcing Ibama, a federal agency, is essential, as is bolstering state-level institutions on the frontlines of environmental crime, such as police, firefighters, and land registration offices.

Illegal deforestation occurs in several ways, but typically involves unlawful land invasions, followed by forest clearance for commercial agriculture and ranching.

Another encroachment, wildcat mining, mostly for gold, undermines local ecosystems and human health, while wildlife trafficking, fueled by unrelenting global demand for rare birds, reptiles, and mammals, also affects forest health.

Currently, two-thirds of global supply chains have no policies on illegal deforestation. Massive investment in high-resolution remote sensing and artificial intelligence-based alert systems is essential, as is tracking illegally extracted commodities in global supply chains and strengthening investigation and prosecution.

One of the most important priorities in the Amazon is developing a transparent and accountable system that allows property titles and land demarcations to be registered and monitored properly over time.

Given the considerable fraud and corruption in most Amazonian countries' land registries, creating a digitised, accessible, and up-to-date ledger is critical to enforcing existing laws and stimulating legal markets.

Developing an online dispute-resolution process to address

outstanding legacy litigation related to competing land claims is no less vital. And establishing a blockchain verification system for land registries to demonstrate a clear chain of ownership and custody, while difficult, would greatly improve the prospects for a green economy.

Another priority is accelerating reforestation and land regeneration. In Brazil, home to 60 per cent of the Amazon, the state of Pará is an obvious location for such efforts. In Colombia, Peru, and Ecuador, which together contain roughly 23 per cent of the Amazon, the states of Amazonas, Loreto, and Pastaza, respectively, stand out.

The key is to build a predictable pipeline of reforestation, biodiversity conservation, and sustainable forest management projects that can scale rapidly.

The Reducing Emissions from Deforestation and Forest Degradation initiative could accelerate funding for such efforts. International financing from the Amazon Fund, US President Joe Biden's administration, and tools such as green bonds would help, while local financing also could play a significant role.

So, too, could initiatives such as the Global Commons Alliance and It.org, along with investor activism, including from sovereign wealth and pension funds. In 2019, some 230 global investors, managing a total of more than \$16 trillion in assets, called on companies to meet their deforestation commitments or risk adverse economic consequences.

Most important are innovations to bolster the green economy and support the communities that are the custodians of the Amazon Basin. Such initiatives could be accelerated by a Brazilian equivalent to the US government's Defense Advanced Research Projects Agency to ramp up research and development, as well as related regulatory frameworks to enable an inclusive bioeconomy in the Amazon.

This approach would include applied research to collect and map Amazon biodiversity – with scientists studying fruits, nuts, plant extracts, and fibers, and using drones to sample biodiversity in hard-to-reach areas – along with digital platforms to secure biological assets for the public good.

To ensure that indigenous and local populations are included and benefit, clear and enforceable data-sharing rules and safeguards to promote local value creation and retention must accompany these efforts. In addition, establishing low- and high-tech innovation hubs in selected countries can stimulate local innovation, harness traditional knowledge, and ensure local ownership.

Advancing the green economy and achieving zero deforestation in the Amazon will depend on the combined efforts of governments, the private sector, and civil society. In Brazil, several groups – including the Concert for the Amazon and the Brazilian Coalition on Climate, Forests, and Agriculture – are playing a pivotal role in shaping the agenda and connecting stakeholders. And with the country's federal government missing in action on this issue, local governments also are stepping up.

Concerted international and regional efforts – such as the Leticia Pact – combined with national and subnational interventions could create a brighter future for the Amazon. The health of the planet depends on it.

Robert Muggah, Juan Carlos Castilla-Rubio, and Julia Sekula contributed to this commentary.

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